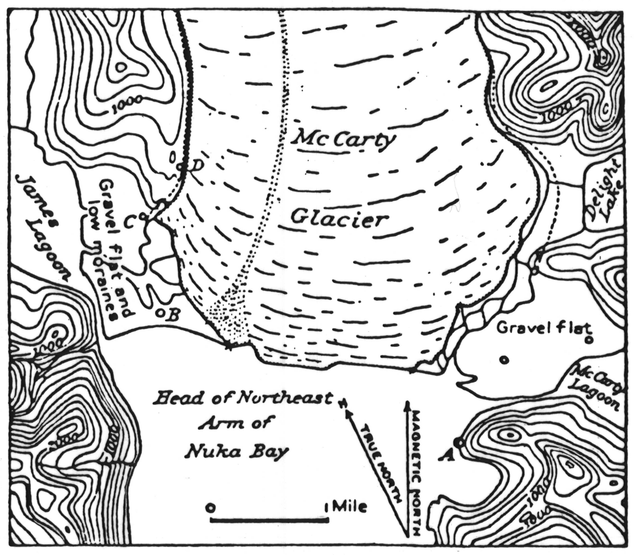
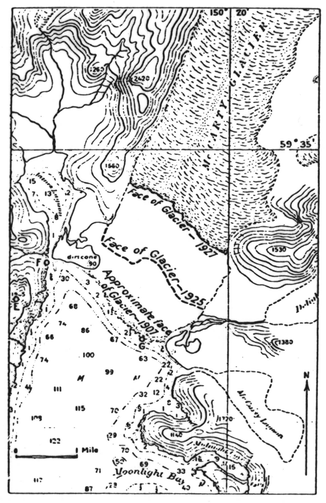
NEOGLACIAL CHANGES (SOUTH PART)



Map C. McCarty Glacier, July 30, 1909. Enlarged from Grant and Higgins, 1913, fig. 13.



Map D. Section of U.S. Coast and Geodetic Survey Chart No. 8530, 1927. Enlarged from Whitney, 1932, p. 390.

Acknowledgments

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Unofficial Name

The name of McCarty Fiord is unofficial.

Recession of McCarty Glacier 1860 -1942

The first known investigation of McCarty Glacier was made in 1909 by Grant and Higgins (1913) of the U.S. Geological Survey. At that time McCarty Glacier ended on the terminal moraine bar (Map C). They reported that the glacier had advanced into forest about 50 years before (toothed line dated 1860), and that subsequent retreat amounted to 1200 ft (360 m) with a 200 ft (60 m) lowering of the ice surface. 1925 photographs (Whitney, 1932, figs. 4 and 5) taken by Lt. Paul Smith of the U.S. Coast and Geodetic Survey (now NOAA) showed a recession since 1909 of about 1 mile (1.45 km) to a point where the water depth exceeds 700 ft (210 m) (toothed line dated 1925). The 1927 U. S. Coast and Geodetic Survey hydrographic survey H-4760 indicates that during the previous two years, continued recession amounted to an additional 0.93 mi (1.5 km) (Whitney, 1932) (Map D). Clearly McCarty Glacier was by then experiencing a drastic retreat.

Former Glacier-dammed Lakes

During McCarty Glacier's neoglacial advance, on the east side two former arms of the fiord were bypassed. Moraines were built across the mouths of the arms, and Delight Lake and an unnamed lake in the next valley north were impounded by the ice. These lakes undoubtedly fluctuated in level (approximate shorelines are shown by dotted lines) and dumped catastrophically, possibly annually, over an outwash delta at the mouth of McCarty Lagoon. Large deltas of a similar nature were directed into each basin as McCarty Glacier advanced past each lake basin. James Lagoon, on the west side of the glacier, like McCarty Lagoon, was in the process of being closed off from the sea by outwash and moraine deposits when the glacier reached its maximum neoglacial extent.

Profile C-C'. A bathometric cross section of McCarty Fiord about 4 miles north of the terminal moraine, shows the steep walls of the fiord plunging to the flat ponded sediments on the fiord floor. Map B (sheet 3) shows about 250 ft (75 m) thick sediments at this point.

Profiles D-D' through F-F' are three longitudinal sounding lines over the terminal-moraine bar. The rather broad, nearly level crest of the moraine evidently is the result of wave and ice erosion plus subsidence due to the 1964 Alaska earthquake. Profile F-F', where the water depths as little as 10 ft (3 m) were recorded, shows the shoal area disproportionately lengthened due to the slow speed of the vessel during the crossing.

PRELIMINARY BATHYMETRY OF MC CARTY FIORD AND NEOGLACIAL CHANGES OF MC CARTY GLACIER, ALASKA

Scale 1:20,000

MAP NOT FOR USE IN NAVIGATION

DEPTH CURVES IN FEET DATUM IS APPROXIMATE MEAN LOWER LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 8 FEET

By
Austin Post
1980